

**Section II (Remarks)****A. Summary of Amendment to the Claims**

By the present Amendment, claim 41 has been amended and claim 43 has been cancelled. Claims 44-45 were previously cancelled. No new matter within the meaning of 35 U.S.C. §132(a) has been introduced by the foregoing amendments.

The amendments made herein are fully consistent with and supported by the originally-filed disclosure of this application.

The amendment to claim 41 adds no new matter whatsoever; such amendment is made to clarify that the filament (not the gas sensor assembly as a whole) has a porous surface. Search and examination of a gas sensor assembly having a porous surface (inherently covering the subset of a gas sensor assembly having a filament with a porous surface) has been previously performed. No additional search or consideration can reasonably be required due to the foregoing minor amendment to claim 41.

**B. Subject Matter Indicated to be Allowable**

In the May 15, 2008 Office Action, claims 1-32, 35-38, 46, and 47 were indicated to be allowable in their current form, while claim 40 was objected to as depending from a rejected base claim, but was indicated to be allowable if rewritten independent form including all of the limitations of the base claim and any intervening claims. May 15, 2008 Office Action, pages 4-5.

**C. Response to Claim Rejections Under 35 U.S.C. 102**

The May 15, 2008 Office Action contained multiple claim rejections under 35 U.S.C. 102, including:

- a rejection of claims 39 and 41-42 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,415,877 to Takami et al. ("Takami"); and
- a rejection of claim 43 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,923,054 to Liu et al ("Liu").

Such rejections are traversed for the reasons provided below.

1. Law Regarding Anticipation

"Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration." *W.L. Gore & Assocs. v. Garlock*, 721 F.2d 1540, 220 USPQ 303 at 313 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). It is not enough that the prior art reference disclose all the claimed elements in isolation. Rather, "**anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim.**" *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1984) (emphasis added). Further, "[u]nder 35 U.S.C. § 102, anticipation requires that ... **the prior art reference must be enabling**, thus placing the allegedly disclosed matter in the possession of the public." *Akzo, N.V. v. United States Int'l Trade Comm'n*, 808 F.2d 1471, 1 USPQ2d 1241, 1245 (Fed. Cir. 1986) (emphasis added).

2. Law Regarding Elements Alleged to be "Inherent" in the Prior Art

MPEP 2112 ("Requirements of Rejection Based on Inherency; Burden of Proof"), states the requirements for inherency-based rejections:

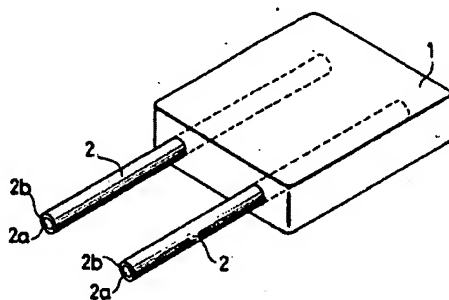
The fact that a certain result or characteristic **may** occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993); *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is **necessarily present in the thing described in the reference**, and that it would be so recognized by persons of ordinary skill. **Inherency, however, may not be established by probabilities or possibilities.** The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' " *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted) ...

"In relying upon the theory of inherency, **the examiner must provide a basis in fact and/or technical reasoning** to reasonably support the determination that the allegedly inherent characteristic **necessarily** flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (some emphasis in original; some emphasis added)

### 3. Traversal of Rejection of Claim 39 Based on Takami

Takami discloses a gas sensing element (e.g., for detecting oxygen in an exhaust stream from an internal combustion engine) having a nickel wire core externally coated with a coating consisting substantially of platinum, with addition of between 1 to 10% of a low catalytic metal such as gold, silver, nickel, cobalt, iron, titanium, and copper.

Figure 1 of Takami is reproduced below, showing a pair of electrodes 2 embedded in an oxide semiconductor 1 to a depth of 1 mm, with 2.5 mm being exposed. "The electrodes 2 of the gas sensing element were inserted into a pair of insulating tubes .. and were sealed with heat-resisting cement ... [and t]he insulating tubes were secured to the exhaust pipe of a four-cylinder 1800 cc engine in such a manner that the gas sensing element was set at the center of the exhaust pipe." (Takami, col. 2, line 65 – col. 3, line 3.)



Takami states that "the gas sensing element according to the invention includes the semiconductor prepared by sintering a metal oxide and one pair of electrodes which are fabricated by coating the surface of two nickel wires with an alloy which contains platinum metal and one or two low catalytic metals in a range of from 1 to 10% by weight, the electrodes being embedded in the semiconductor." (Takami, col. 5, lines 10-17.) Takami further discloses that "the content of the low catalytic metal is limited to 1 to 10% with respect to that of the platinum metal because if the content of the low catalytic metal is less than 1%, the [catalytic] effect is considerably low, and if it exceeds 10%, the electrodes are broken when used for a long time [due to embrittlement and differential thermal expansion characteristics between the low catalytic metal and the platinum metal]." (Takami, col. 2, lines 18-37.)

Claim 39 of the instant application recites:

39. A gas sensor assembly comprising a gas-sensing filament comprising a **nickel-copper-aluminum alloy**. (Emphasis added.)

The foregoing nickel-copper-aluminum alloy requires the presence of nickel, copper, **and aluminum**.

The term “alloy” may be defined as “a **solid solution or homogeneous mixture of two or more elements, at least one of which is a metal**, which itself has metallic properties. It usually has different properties from those of its component elements.”

(Source: <http://en.wikipedia.org/wiki/Alloy>)

Applicants have previously argued, and continue to argue, that Takami fails to disclose any sensing element including an alloy comprising nickel, copper, **and aluminum** in combination.

Nowhere has the examiner specifically alleged that Takami discloses any sensing element including an alloy including **all three** of nickel, copper, **and aluminum** in combination. To the contrary, the examiner has repeatedly alleged that Takami discloses an alloy comprising **nickel and copper** (i.e., but the examiner fails to allege that Takami discloses an alloy comprising aluminum). See, e.g., the May 15, 2008 Office Action at pages 3 and 5 thereof, as reproduced in pertinent part below:

5. Claim, 39 and 41-42 are rejected under 35 U.S.C. 102(b) as being anticipated by Takami et al. (US Patent 4,415,877).

Regarding claim 39, Takami discloses a gas sensor assembly comprising a gas sensing element comprising a nickel-copper alloy (see: col. 5, lines 11-16 and col. 6, lines 11-14).

10. In response to applicant's argument that "Takami fails to teach any alloy containing all three of nickel, copper and aluminum" The Examiner, respectfully, disagrees with Applicant's argument because Takami discloses examples of catalytic metals which may be used in the invention are gold, silver, **nickel**, cobalt, iron, titanium and **copper** (col. 6, lines 11-14). The nickel wires are covered with an **alloy** essentially of platinum metal (col. 1, lines 63-64).

The "nickel-copper alloy" identified by the examiner as disclosed by Takami **cannot be equated with a nickel-copper-aluminum alloy** as required by claim 39 because a nickel-copper alloy does NOT include aluminum. Likewise, the list of metals identified by the examiner at col. 6, lines 11-14 of Takami does NOT include aluminum. Aluminum is not disclosed anywhere by Takami; such patent fails to ever mention the word aluminum, or the chemical symbol "Al." **The examiner is hereby challenged to point to specific disclosure of aluminum in Takami, or withdrawn the anticipation rejection of claim 39.**

Because Takami fails to teach any use of aluminum in a gas sensing element as required by claim 39, Takami fails to disclose "each and every element of [claim 39], arranged as in the claim" as required to support an anticipation rejection. (*Lindemann, supra.*). Accordingly, withdrawal of the anticipation rejection of claim 39 is warranted, and is respectfully requested.

It is further noted that aluminum is readily oxidized in the presence of oxygen (see Exhibit A: "Advanced Structural Materials: Properties, Design Optimization, and Applications" by W. O. Soboyejo, T. S. Srivatsan, eds., CRC Press, 2006, page 263<sup>1</sup> (ISBN 1574446347)), whereas **Takami specifically teaches that oxidation of a gas sensing element should be prevented** (e.g., through use of platinum and similar materials). (Takami, col. 1, lines 24-30). Accordingly, any hypothetical modification of Takami to incorporate aluminum into Takami's sensor would contradict a key purpose of Takami's invention.

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<sup>1</sup> "Aluminum is an active metal that tends to readily oxidize under the influence of high free energy of the reaction whenever the necessary conditions for oxidation are conducive and/or prevailing." (Id., pp. 263.)

4. Response to Objection to Claim 40

Because claim 40 depends from claim 39, and claim 39 should be allowed for the reasons stated hereinabove, withdrawal of the objection to claim 40 is likewise requested.

5. Traversal of Rejection of Claims 41-42 Based on Takami

Claim 41 as amended herewith recites:

41. A gas sensor assembly comprising a nickel-containing gas-sensing filament, wherein the gas-sensing filament has a porous surface.

In the May 15, 2008 Office Action, the examiner advanced seemingly contradictory interpretations of Takami's disclosure in support of the rejection of claim 41. At page 3 (paragraph number 5) of the May 15, 2008 Office Action, the examiner suggested that the sintered oxide embodied porous surface recited in prior claim 41, whereas at page 5 (paragraph number 10), the examiner alleged that Takami's "nickel containing gas filament inherently includes a porous surface." The pertinent passages of the May 15, 2008 embodying such contradiction are reproduced below.

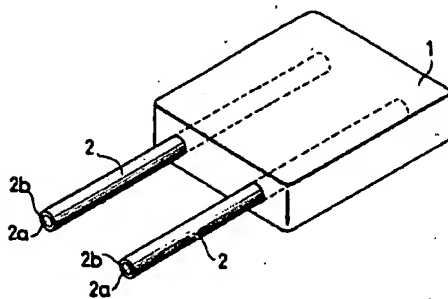
Regarding claims 41-42, Takami discloses the semiconductor made of the sintered oxide (hereinafter referred to as "an oxide semiconductor") is made porous to increase the gas sensing ability. Therefore, CO and HC in the exhaust gas enter the porous semiconductor and come in contact with the platinum metal electrodes, and carbon is deposited by their catalytic reaction (col. 1, lines 30-36).

(Takami, page 3, paragraph number 5.)

11. In response to applicant's argument that "Takami fails to teach a porous surface, the Examiner, respectfully, disagrees because the nickel containing gas filament inherently includes a porous surface.

(Takami, page 5, paragraph number 10.)

Amended claim 41 requires a gas-sensing filament having a porous surface. The **sintered oxide semiconductor of Takami** referenced by the examiner does **NOT** constitute a filament; rather, such oxide semiconductor 1 is coated over two electrodes 2, 2 (see Takami Figure 1, reproduced below).



Because Takami's sintered oxide semiconductor 1 does not constitute a filament, such oxide semiconductor does not embody a "gas sensing filament [having] a porous surface" as recited in claim 41.

The examiner's alternative allegation that Takami's "nickel containing gas filament inherently includes a porous surface" is not supported by Takami's disclosure or the law regarding inherency-based rejection. The examiner has identified no basis whatsoever and no technical reasoning whatsoever for the conclusion that Takami's filament inherently includes a porous surface. "In relying upon the theory of inherency, **the examiner must provide a basis in fact and/or technical reasoning** to reasonably support the determination that the allegedly inherent characteristic **necessarily** flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (some emphasis in original; some emphasis added). **Inherency... may not be established by probabilities or possibilities.** The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' " *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999)

Nothing in Takami supports the examiner's conclusion that Takami's filament inherently embodies a porous surface. Given the absence of clear teaching by Takami of a gas-sensing filament having a porous surface, and the fact that the examiner has premised a rejection of claims on the supposed "inherent" disclosure by Takami of such a feature, the **examiner is**

hereby challenged to provide not simply an unsupported conclusion, but rather a basis in fact and/or technical reasoning to support the allegation that Takami's filament has a porous surface, or to withdraw the rejection of claim 41 premised on Takami.

6. Comment on Rejection of Claim 43 as Moot

In the May 15, 2008 Office Action, claim 43 was rejected as anticipated by Liu. As claim 43 has been cancelled herewith, the rejection of such claim is moot.

D Response to Claim Rejections Under 35 U.S.C. 103

In the May 15, 2008 Office Action, claims 33-34 were rejected under 35 U.S.C. 103 as being invalid for obviousness over Takami in view of U.S. Patent No. 6,100,587 to Merchant et al. ("Merchant"). Such rejections are traversed for the reasons provided below.

1. Law Regarding Obviousness Rejections

To support a rejection under 35 U.S.C. 103, **the prior art reference(s) must teach all of the limitations of the claims.** MPEP § 2143.03.

In considering a reference for its effect on patentability, the reference is required to be considered in its entirety, including portions that teach away from the invention under consideration. Simply stated, the prior art must be considered as a whole. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984) (emphasis added); MPEP § 2141.02. "It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art." *Application of Wesslau*, 353 F.2d 238, 241 (C.C.P.A. 1965); *Bausch & Lomb, Inc. v. Barnes-Hind/Hydrocurve*, 796 F.2d 443, 448 (Fed. Cir. 1986), *cert. denied*, 484 U.S. 823 (1987). The Federal Circuit and its predecessor court have repeatedly held that if references taken in combination would produce a 'seemingly inoperative' device, then such references teach away from the combination and cannot serve as predicates for a *prima facie* case of obviousness. *McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 60 USPQ2d 1001, 1010 (Fed. Cir. 2001); *In re Gordon*, 733 F.2d 900, 902, 221 USPQ



1125, 1127 (Fed. Cir. 1984); *In re Sponnoble*, 405 F.2d 578, 587, 160 USPQ 237, 244 (C.C.P.A. 1969).

In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned. *In re Oetiker*, 977 F.2d 1443, 1446, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992); MPEP 2141.01(a).

According to the recent U.S. Supreme Court decision in *KSR International Co. v. Teleflex Inc.*, 127 S.Ct 1727, 167 L.Ed.2d 705, 82 USPQ2d 1385 (April 30, 2007), the court did not disavow the previous "teaching, motivation or suggestion" or "TSM" test, but stated that such TSM text *should not be strictly applied* in determining obviousness. In connection with this point, the Supreme Court stated that:

**"A patent composed of several elements is not proved obvious merely by demonstrating that each element was, independently, known in the prior art. ... [Rather], it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant art to combine the [prior art] elements in the manner claimed."** *KSR*, 82 USPQ2d at 1389.

It is fundamental to a proper rejection of claims under 35 U.S.C. § 103 that an examiner must present a convincing line of reasoning supporting the rejection. MPEP 2144 ("Sources of Rationale Supporting a Rejection Under 35 U.S.C. 103"), citing *Ex parte Clapp*, 227 USPQ 972 (Bd. Pat. App. & Inter. 1985). The Supreme Court in *KSR* affirmed the validity of such approach, stating that **"there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness."** *KSR*, 82 USPQ2d at 1396.

In *KSR*, the Supreme Court further confirmed that references that teach away from the invention are evidence of the non-obviousness of a claimed invention, (*KSR*, 82 USPQ2d at 1395, 1399) and reaffirmed the principle that a factfinder judging patentability "should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning."

## 2. Patentable Distinctions of Claim 33 Over Takami and Merchant

Claim 33 recites:

33. A gas sensor assembly comprising a gas-sensing filament comprising a coating structure and a core structure, wherein said coating structure comprises nickel or nickel alloy, and wherein said core structure comprises silicon carbide.

Disclosure corresponding to the foregoing claim is

[0041] One preferred embodiment of the invention employs a gas-sensing filament comprising a fluoro-reactive coating structure that contains nickel or nickel alloy, while such **coating structure encapsulates a high resistivity, low thermal mass core structure, which is characterized by an electrical resistivity that is higher than that of the coating structure and a heat capacity (i.e., the product of specific heat  $C_p$  and density  $D$ ) that is lower than that of the coating structure.**

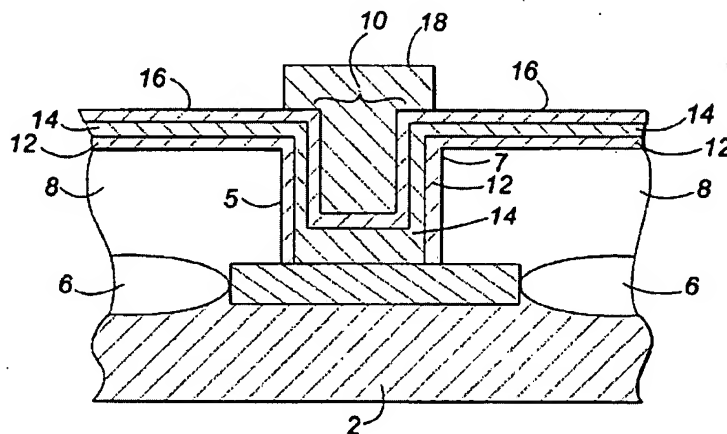
[0042] Preferably, such core structure is characterized by an electrical resistivity that is at least fifty (50) times larger than that of the coating structure, and a heat capacity that is less than three fourth (3/4) of that of the coating structure. More preferably, such core structure is characterized by an electrical resistivity that is at least one thousand (1000) times larger than that of the coating structure, and a heat capacity that is less than one half (1/2) of that of the coating structure. Most preferably, such core structure is characterized by an electrical resistivity that is at least  $10 \text{ m}\Omega\cdot\text{cm}$  and a heat capacity that is less than  $2.5 \text{ J/K}\cdot\text{cm}^3$ .

[0043] Many combinations of materials are available for forming such coating and core structures. Without limiting the broad scope of the present invention, examples of materials suitable for forming the coating and core structures are herein provided, which include: (1) pure nickel for the coating and a nickel alloy (such as Monel, a nickel-copper alloy) for the core; (2) pure nickel or nickel alloy for the coating and silicon carbide for the core; (3) pure nickel or nickel alloy for the coating and carbon for the core, etc.

The disclosure of Takami has been discussed hereinabove. In the May 15, 2008 Office Action, the examiner admits that Takami does not disclose any gas-sensing filament including a core structure comprising silicon carbide. (May 15, 2008 Office Action, page 4).

Merchant discloses the incorporation of a silicon carbide barrier layer (or silicon carbide doped barrier layer) on a porous low-k dielectric layer of a substrate and/or semiconductor. In the background of the invention, Merchant states that metal layers deposited on dielectrics often exhibit migration problems whereby metallic elements leach or migrate into the pores of the

dielectric. Furthermore, Merchant states that porous dielectric may allow moisture to creep into the pores. (Merchant, col. 1, lines 24-31.) To address both problems of metal leaching and moisture intrusion, Merchant discloses addition of silicon carbide-containing barrier layer between a metal layer and a lower (or interior) dielectric layer. Figure 4 of Merchant is reproduced below.



**FIG. 4**

Merchant refers repeatedly to formation of substrates and semiconductors, but **never mentions** any “filament,” “core,” or “wire,” and is **not directed to any gas sensing application** whatsoever.

With respect to claim 33, the examiner characterizes Takami as follows:

Regarding claim 22, Takami discloses a gas sensor assembly (col. 2, lines 46-52) comprising a **gas-sensing filament** (1) comprising a coating structure (2b) and a core structure (the lead wires are formed of **nickel core**, see abstract) wherein said **coating structure comprises nickel or nickel alloy** (col. 1, lines 63-64 and col. 2, lines 60-64). However, Takami does not particular disclose wherein said core structure comprises silicon carbide.

In other words, the examiner admits that Takami discloses a gas sensing filament having a nickel core and a coating of nickel or nickel alloy, and that Takami does **NOT** disclose a gas sensing filament with a silicon carbide core.

As for motivation to combine Merchant and Takami, the examiner states:

64). However, Takami does not particularly disclose wherein said core structure comprises silicon carbide. Merchant discloses a barrier layer further comprising silicon carbide (col. 1, lines 42-43). It would have been obvious to one having ordinary skill in the art at the time of the invention to utilize in Takami the core structure of Merchant because the barrier layer comprises silicon carbide (SiC) or silicon carbide doped by chemical vapor impregnation (CVI) with a boron-containing compound and the silicon is bonded with a metal wherein the metal may be, for example, titanium. Therefore, the above combination would provide effectively a barrier layer which is deposited onto the dielectric to inhibit the absorption of any moisture or any unwanted migration into the porous dielectric material.

The reasoning advanced by the examiner to support the hypothetical combination of Takami and Merchant is flawed in multiple respects.

First, Takami and Merchant represent non-analogous art. Takami teaches gas sensing elements for automotive use, to promote reliable gas sensing utility at a low cost. Merchant discloses barrier layers used for semiconductors or substrates to prevent metal leaching and/or moisture intrusion. The problems faced by the two applications are not readily analogous.

Second, there exists no “articulated reasoning with some rational underpinning” to combine Takami and Merchant as proposed by the examiner. As indicated by the examiner, Takami discloses sensing electrodes having a metal (e.g., nickel) core and a metal (e.g., nickel or nickel alloy) coating. No silicon carbide core is disclosed by Takami, as further conceded by the examiner. The examiner states that it would have been obvious “to utilize in Takami the core structure of Merchant [including a barrier layer comprising silicon carbide ... because] the above combination would effective provide a barrier layer which is deposited on the dielectric to inhibit the absorption of any moisture or any unwanted migration into the porous dielectric material.” (May 15, 2008 Office Action, page 4.) Such rationale erroneously pre-assumes that Takami

discloses a silicon carbide core that would benefit from presence of a barrier to prevent metal leaching or moisture absorption – yet the examiner has already admitted that “Takami does not particular disclose wherein said core structure comprises silicon carbide.” (May 15, 2008 Office Action, page 4.)

Again, the examiner admits that Takami discloses a sensing electrode having a nickel core and a nickel-containing coating (May 15, 2008 Office Action, pages 3-4.) In this regard, Takami’s sensor is not susceptible at all to metal leaching problems (namely, “problematic” leaching of nickel into nickel?), or problems with moisture intrusion (because neither a nickel coating nor a nickel core is porous or susceptible to any problem with respect to moisture intrusion). The examiner appears to have engaged in impermissible hindsight reconstruction of non-analogous and disparate prior art disclosures to arrive at the subject matter of claim 33.

There exists no logically sound reason supporting the proposed combination of Takami’s nickel-on-nickel sensing electrode with the dielectric-barrier-metal (non-filament) substrate of Merchant. Because the examiner’s conclusion of obviousness of claim 33 premised on the combination of Takami and Merchant lacks “articulated reasoning with some rational underpinning,” as required to support an obviousness rejection (*KSR, supra*), the rejection of claim 33 should be withdrawn.

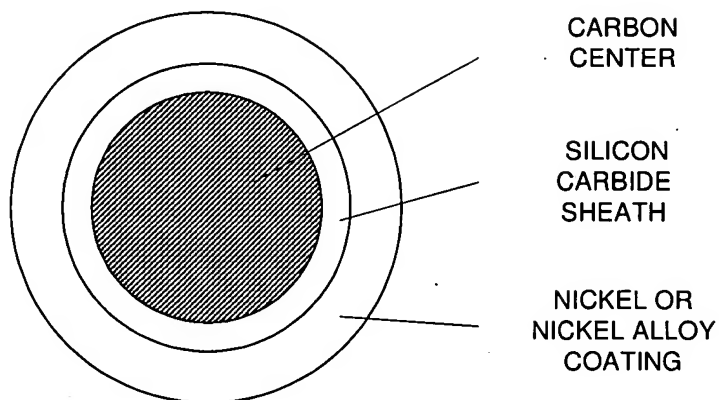
### 3. Patentable Distinctions of Claim 34 Over Takami and Merchant

Claim 34 recites:

34. A gas sensor assembly comprising a gas-sensing filament comprising a coating structure and a core structure, wherein said **coating structure comprises nickel or nickel alloy**, and wherein said **core structure comprises a carbon center and a sheath of silicon carbide**.

The preceding arguments relating to claim 33 are hereby incorporated by reference with regard to claim 34. Briefly, Takami and Merchant represent non-analogous art directed to solving different problems as to different end uses, and there exists no logically sound reason to combine the two disclosures to yield the subject matter of Applicants’ claims.

The structure of claim 34, including a carbon center, a silicon carbide sheath, and a nickel or nickel alloy coating, is illustrated below

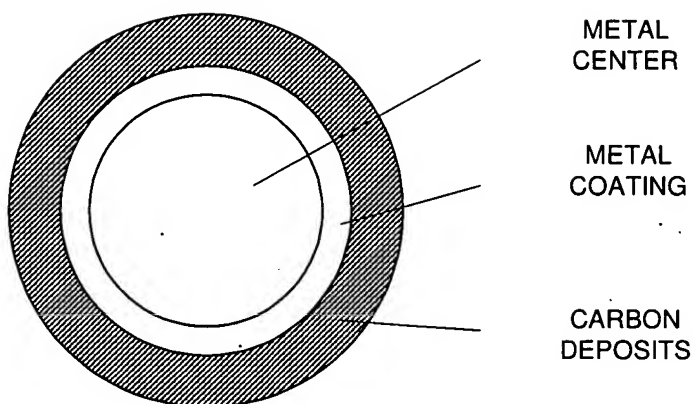


With respect to the obviousness rejection of claim 34, the examiner has alleged the following:

Regarding claim 34, Takami further discloses it can be estimated that the electrode breakage was due to the accumulation of carbon, in both cases. The electrode indicated by specimen numbers 21 through 27 whose cover layers were formed with alloy containing less than 1% low catalytic metal by weight, deposited carbon in 100 hours which might result in the semiconductor cracks (see: col. 3, lines 67-68 and col. 4, lines 1-10, see also: col. 5, lines 10-22).

(May 15, 2008 Office Action, page 4.)

Noting that Takami's sensor is adapted for use in a motor vehicle exhaust conduit, accumulation of fuel combustion products (including carbon) on the outer surface of such as sensor is to be expected. Such accumulation, however, would necessarily be on the outside of Takami's electrode, as illustrated below.



In this regard, Takami fails to teach or suggest any "core structure comprising a carbon center" as required by claim 34. Even if there existed any sound reason to combine Merchant with Takami, which reason is lacking, Merchant similarly fails to teach such a structure.

Because the cited art fails to teach all elements of claim 34 (as required to support an obviousness rejection pursuant to MPEP § 2143.03), withdrawal of the rejection of such claim under 35 U.S.C. 103 is warranted, and is respectfully requested.

### CONCLUSION

Based on the foregoing, all of Applicants' pending claims are patentably distinguished over the art, and in form and condition for allowance. The examiner is requested to favorably consider the foregoing, and to responsively issue a Notice of Allowance. Due to the minor character of the claim amendments made herewith, no additional search or consideration should reasonably be required. If any issues require further resolution, the examiner is requested to contact the undersigned attorney at (919) 419-9350 to discuss same.

Respectfully submitted,

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